

# COMPREHENSIVE SOLUTION FOR WATER SUPPLY NETWORK MANAGEMENT



## INTRODUCE

Citywork refers to a comprehensive and systematic information technology application solution for water supply enterprises. Citywork applies the digital map technology (GIS technology), mobile technology and cloud computer technology to collect and prepare the water supply network map, modernize the management and maintenance of water supply network assets; customer management and care; recording and inspecting the water meter; management of water meter and water quality, etc.



**ANYTIME, ANYWHERE,  
ON ANY DEVICE!**

## BENEFITS

Facilitate to reduce the water loss rate by quickly detecting and timely handling the network failures as well as quickly detecting and fixing the damaged or inaccurate meters

Reduce costs of repairing and maintaining the water supply network assets by closely managing the record, inspection history and equipment repair and maintenance history in the network map

Reduce costs by improving the asset useful life and performance through close management of operation and maintenance procedure of water supply network assets

Contributing to improve the labor productivity by close management, quick and timely information provision to facilitate inspection, repair and maintenance of water supply network assets

Shorten the inventory time for water supply network assets, preparation of annual repair and maintenance schedule

Reduce loss of revenue from fraudulent prevention during recording the water meter readings. Prevent errors during billing and printing water bills

Reduce total time for recording readings, billing and printing water bills

Improve the customer service quality by timely handle the incidents and customer claims

## DIFFERENCE

Not be acknowledged as software application for single issue, CITYWORK offers a comprehensive and systematic IT application solution with all-in data link, integration and retrieval (assets, customers, maintenance, etc.) in the map as well as accessibility and usability at anytime and anywhere in any devices

Detailed and diversified base map (satellite, traffic and administration, etc.) is continuously updated to easily draw the accurate water supply network assets from the drawings and as-built diagrams into water supply network

Quickly update and edit the water supply network map, easily use with a series of specially designed tools for water supply

Support recording the water meter readings by mobile devices in various mobile backgrounds such as: Android and iOS

Not require to install software, use software at anywhere connected with Internet via web browser

Allow to collect field data (position, image and information) about water network assets and equipment by mobile devices with accurate position adjustment capacity in base map at site

Allow to look for information about water supply network assets in mobile device to support on-site asset inspection and maintenance

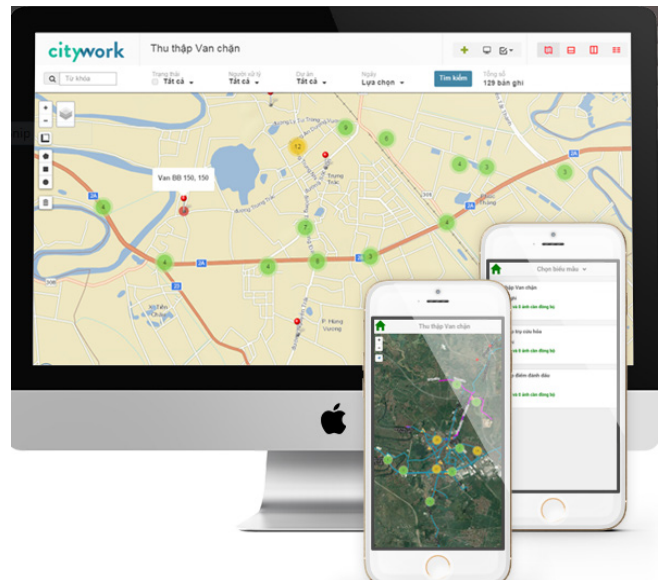
Save maximum costs by subscribing software: flexible price divided into various packages by customer scale and low cost

Offer 24/7 support, continuous update and free-of-charge new software features Consume less time for deployment

# 1 SUBSYSTEM OF WATER SUPPLY NETWORK MAP

## Collect data to facilitate to map the mobile-based water supply network

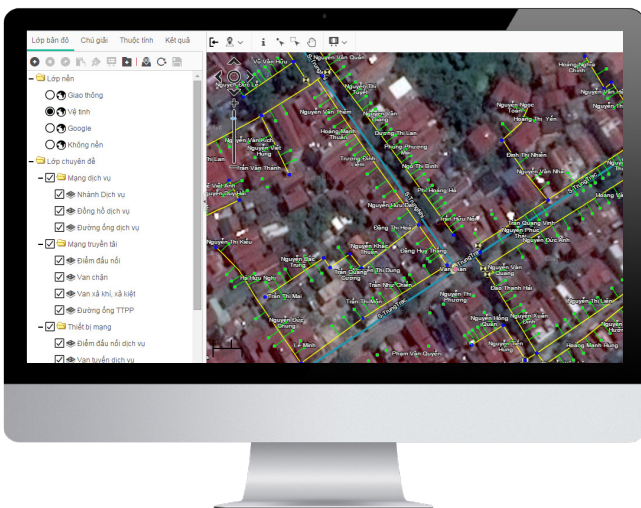
Citywork allows collecting information about position and images as well as technical information to facilitate to prepare the map and assets of the water supply network such as: position of water plant, system valve, control valve, block valve, meters, pipeline, fire hydrants, ELBOWS, COUPLINGS, TEE, etc., at site by applications installed in the mobile devices (smart phones or tablets). Collected data is directly synchronized from mobile devices to the system to facilitate to prepare the water supply network map.



## Edit and update the water supply network map

Support to prepare the water supply network map from the on-site collected data sources or other available data sources such as: GPS measurements, as-built drawings/previous map or simultaneously combining such data sources.

Supply the essential drawing and editing tools to support to prepare the water supply network map: data entry tools from various formats; mapping tools; map editing tools; tools for updating the records, documents and attached images; supporting tools for displaying the map layers.





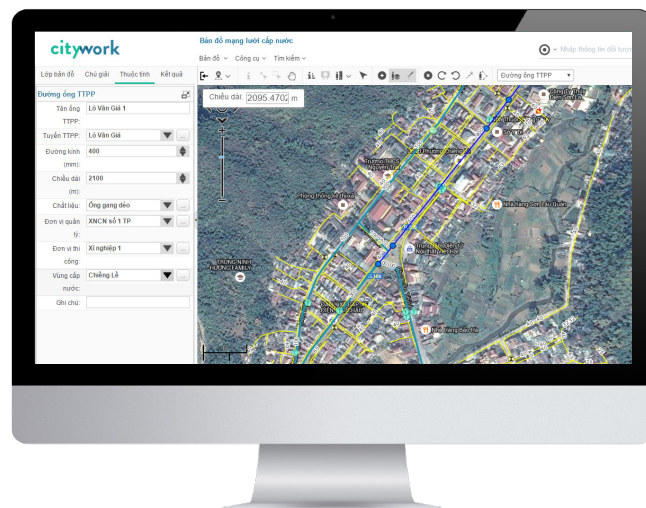
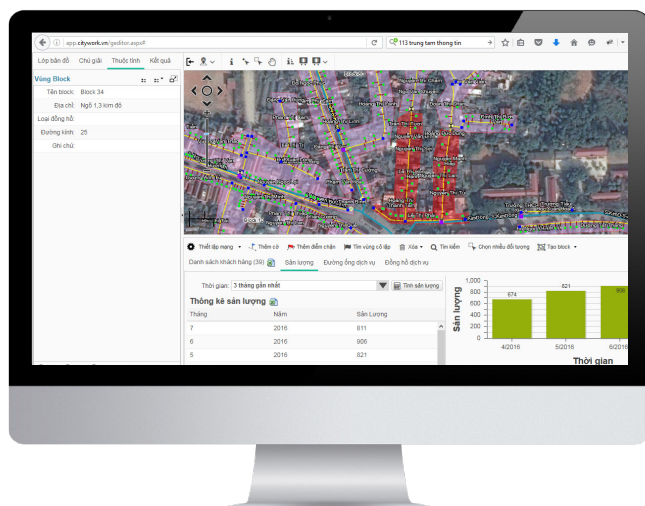
## Visual asset management (pipeline, equipment, etc.) in water supply network map

Support to visually manage the technical parameters, images, data and position, etc., of the assets and equipment in the water supply map. Offer the capacity to allow the users to actively adjust and expand the management information for various available assets and equipment and further supplement various new assets and equipment to successfully satisfy the future management demand.

Monitor and record the inspection, maintenance and service contents and results cemented with each asset and equipment in the water supply network to successfully improve the water supply system performance, useful life of the works and equipment, minimize the risks and failures. Support to summarize and make statistics on pipeline conditions (pipeline length by diameter and materials), meters (number of meters by diameter and models) in the concerned area. Offer tools to help the technician to evaluate and prepare the plan on network improvement and upgrade.

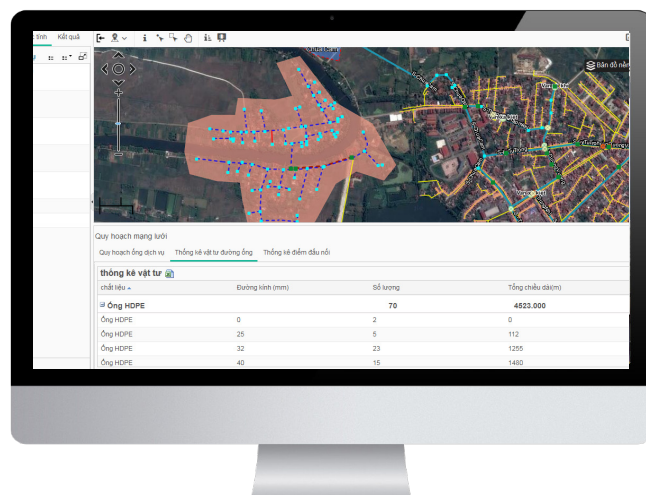
## Design and install BLOCK meter to prevent loss

Offer the function to combine the water output history of the customer in an area to support the technician to select and install the proper block meters to serve for network division zoning for loss prevention purpose.



## Prepare the plan on visual network development in water supply network map

Support to release the network development plan in detailed map on terrain and traffic in new area (Preliminary design of pipelines, connections and basic parameters of pipelines). Automatically prepare the breakdown data sheet of pipeline materials (pipeline length by diameters, materials, etc.), connection points (Number of T, Couplings and Elbow, etc.)

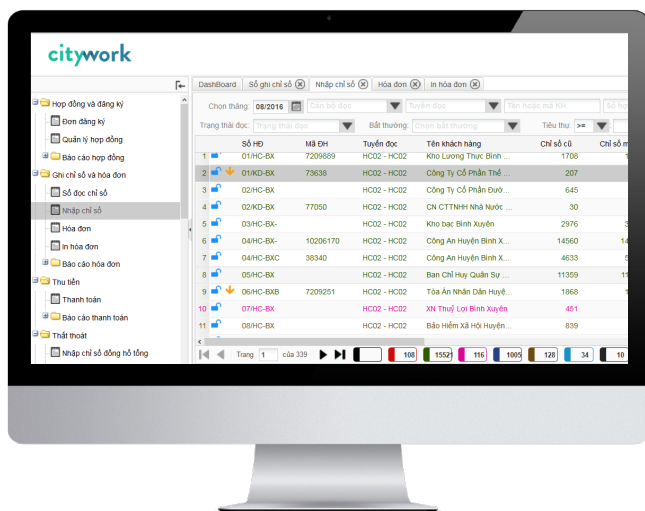
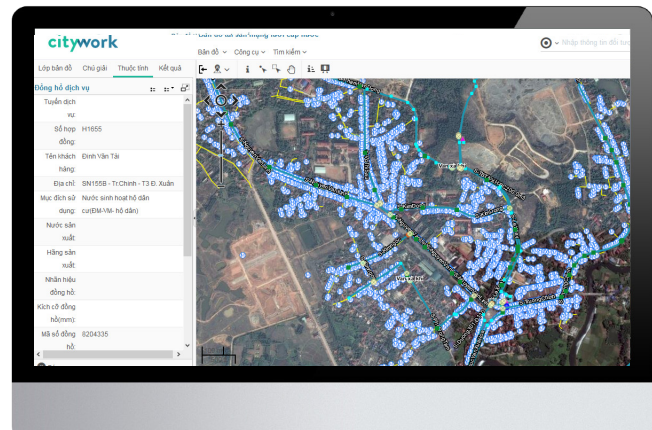


## 2 CUSTOMER MANAGEMENT SUBSYSTEM

### Visual water user management in map

Support to collect the water meter positions at site by mobile device

Support to fully manage the visual map-based customer information



### Fully support the customer management operations

- Manage the water consumption registration
- Support to prepare the installation estimates for new users
- Manage the water service contract
- Manage the history of water meter installation
- Manage the readings record route
- Manage the digital readings
- Cash, print water bill
- Manage the water bill payment
- Manage the the replacement of water meter
- Manage the arrears water bill
- Management, care, notice water bill information via SMS, Email

### Support to conduct customer data summary and analysis

Supporting to analyze the customer data to prevent loss on revenue and water loss

Diversified reporting and summarizing system: output, revenue, rate-based revenue, invoice checklist, invoice and liability summary table, etc.

Dashboard interface used to provide the most important production and business indicators for the enterprise's leader



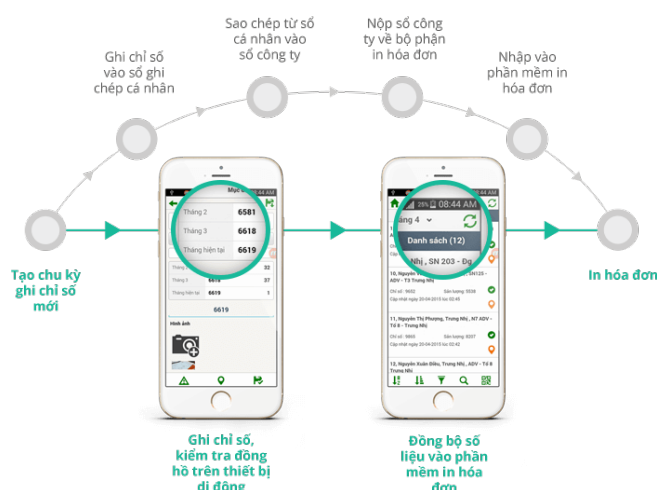
### 3 APPLICATION FOR READINGS RECORDING AND INSPECTION OF WATER METER BY MOBILE PHONE

Automatically synchronize the list of readings recording route, concerned customers from the system into the mobile phone of recording officer

Record the readings at customer's home without 3G or telephone coverage

Synchronize the readings data recorded from telephone to system when WIFI connection is available

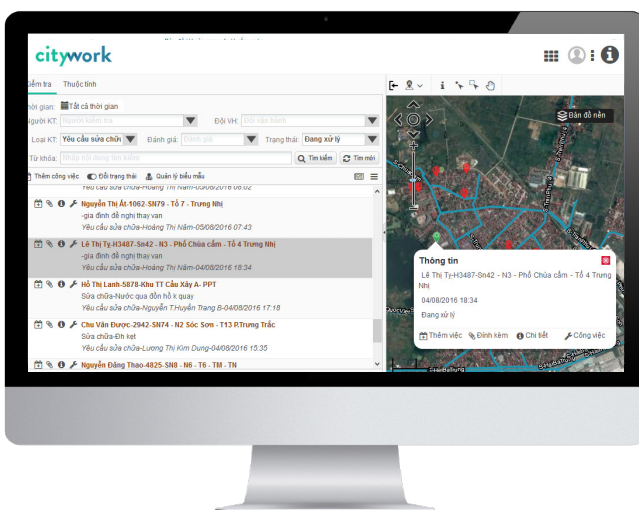
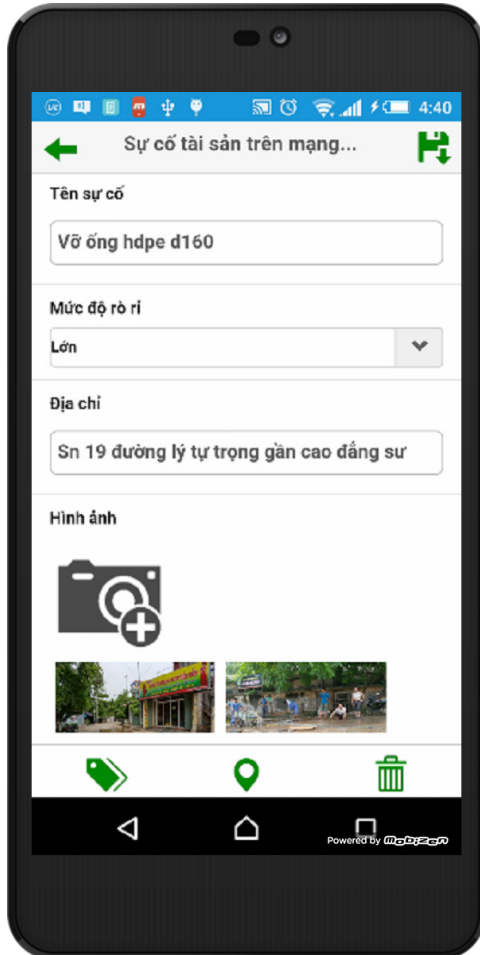
Support position surveillance and readings recording time to prevent any fraudulence during readings are recorded.



- Automatically find out the customer by available position of the recording officer
- Support to look for customer by capturing bar code
- Supply information about readings consumed in 2 recent months
- Automatically calculate the consumption output and bill
- Support to capture the meter surface on the recording date
- Automatically collect position and time information on the recording date to prevent fraudulence
- Update the payment on the recording date (if any)
- Print the water payment receipt at site
- Automatically warn the recording officer in case of abnormal consumption output
- Synchronize data into the Customer Management Subsystem when 3G or WIFI connection is available to serve for billing and receipt printing
- Support to inform the water meter damages during recording

## 4 MANAGEMENT SUBSYSTEM OF WATER SUPPLY NETWORK REPAIR AND MAINTENANCE

Collect information, position and images of inspecting equipment and pipes by mobile telephone even when 3G or telephone coverage is unavailable. Automatically synchronize the system inspection results even when 3G or WIFI connection is available



Conduct the concentrated and visual management of inspection **results and failures** in water supply network map

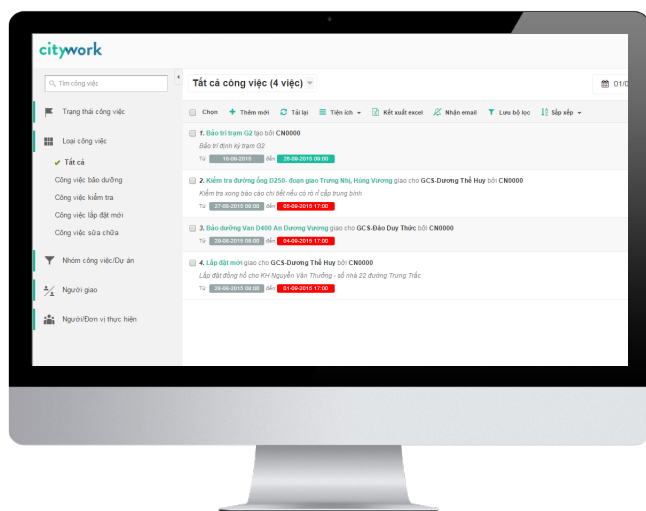
On-site inspection results shall be synchronized into the center. The manager shall clearly see all inspection results and accidents in the map, understand the accurate position and existing condition image of the assets, etc.

The accident's status may be filtered and searched by filtering conditions: processed, un-processed, pending, filtering by inspector, etc., to serve for timely troubleshooting duty assignment



## Receive and manage centrally the customer request

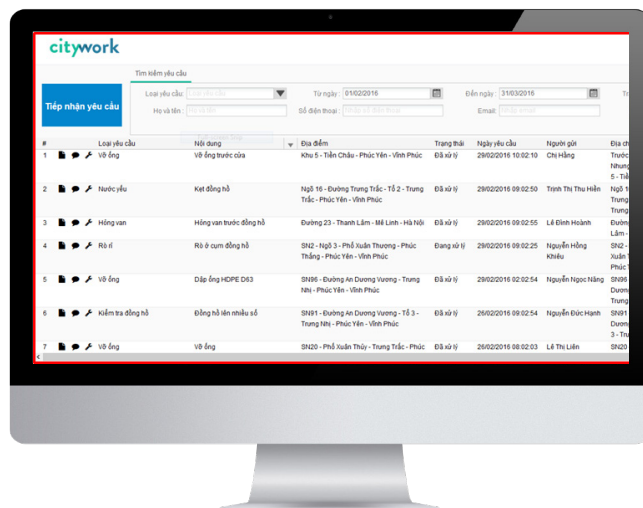
Supply the applications to serve for quickly recording the customer requests on water supply condition and failures, etc. All requests are centrally and visually managed in the map in accordance with the customer information, details and required position. Accordingly, the manager may assign the troubleshooting duty to his subordinate right in such application



## Undertake the job, report the work performance, look up the on-site asset and equipment information, etc., through mobile device

Asset maintenance work in the water supply network shall be delivered to the telephone or tablet of the employee with the information about the work requirements, work position, etc., to perform the work.

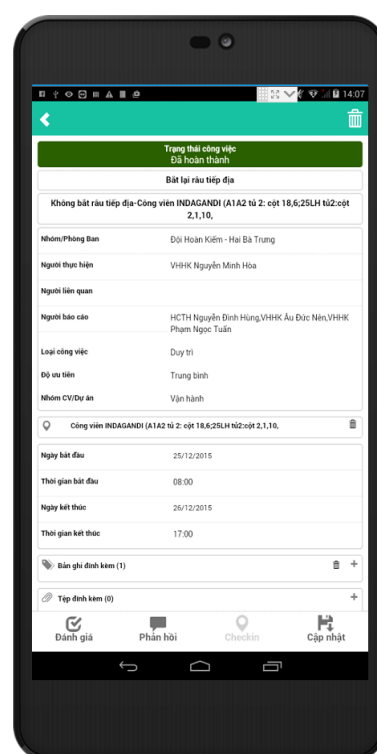
At the assigned troubleshooting position for asset maintenance, the images may be collected (unrestricted number of captured images: photos of existing conditions, etc.), video and other information. It is possible to feedback the information and report the works, look for the on-site asset information by mobile device.



## Assign task, supervise the repair and maintenance of water supply network

Manager may conduct duty assignment to his subordinate to repair and maintain the water supply network from the inspection results or maintenance and repair request raised by the customer at the site and enclose the concerned information into the duty assignment worksheet for the repair and maintenance officer

Manager may follow up and supervise the work performance submitted from the site and obtain the paramount view of map-based work performance, knowing accurately the working position and time of the employee and existing conditions of the assets and failures, etc., through the concerned images.

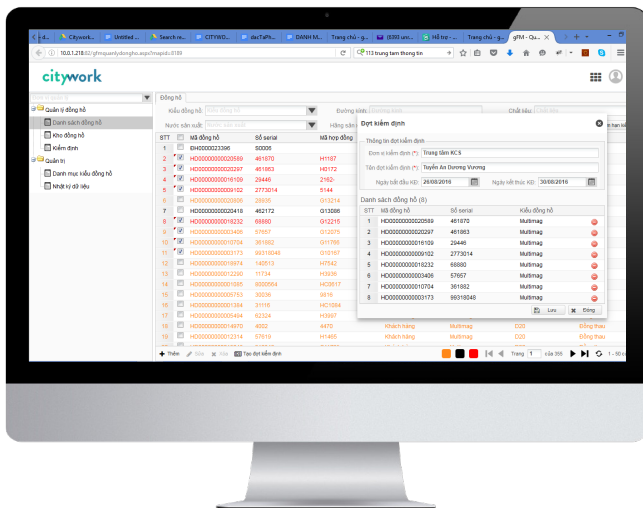
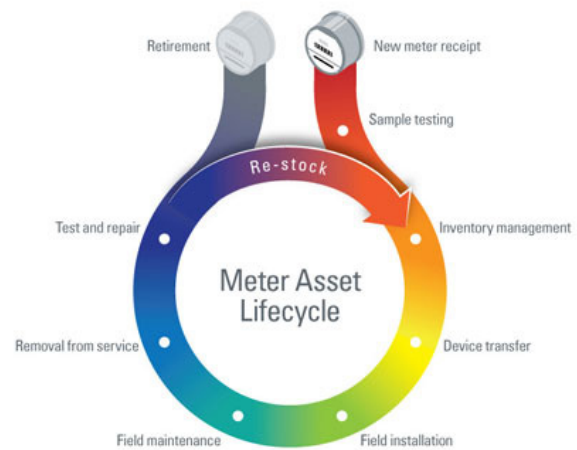




## 5 WATER METER MANAGEMENT SUBSYSTEM

**Manage water meter** by asset life cycle management model

Support the water meter by asset life cycle since stock-in and use, inspection times and meter conditions till liquidation.

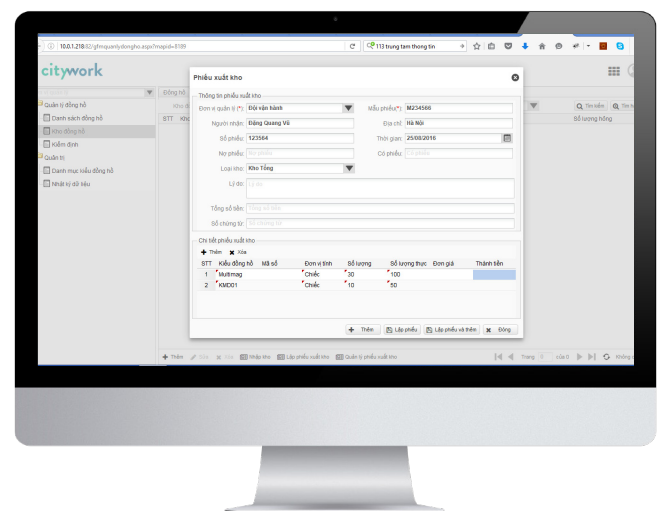


**Manage water meter inspection**

Monitor the inspection interval, date of use of the meter to prepare the list of meters to be inspected. Support the tools to prepare the inspection schedule, update the post-inspection results. Offer utilities to export the list of inspected meters, inspection minutes with the customers, etc.

**Manage water meter stock in/out**

Support to manage the meter stock in/out and closely manage the available water quality. Quickly check the inventory meters by models to release the stock in solution.



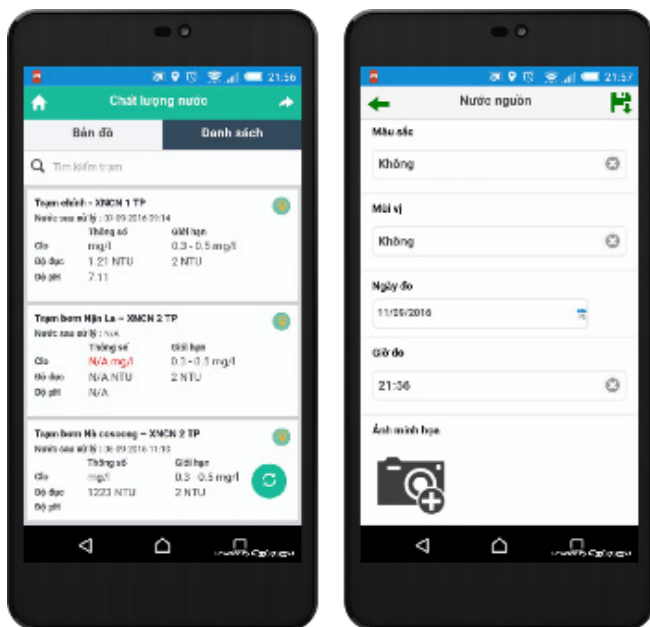
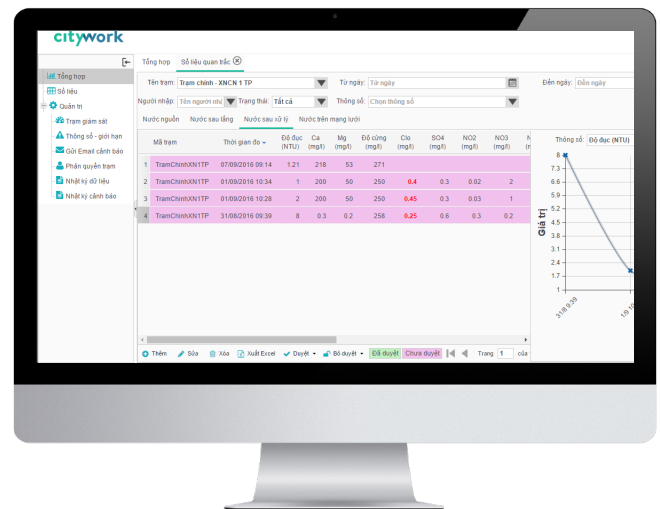
## 6 WATER QUALITY MANAGEMENT SUBSYSTEM

### Manage the water quality data

Provide the functions to manage, update and declare the water quality data of water sources, post-settling water, post-treatment water and network-based water.

Support to exploit the latest monitoring data and history right in the mobile devices.

Fully support the criteria set in the national technical regulation on portable water quality QCVN 01:2009/BYT

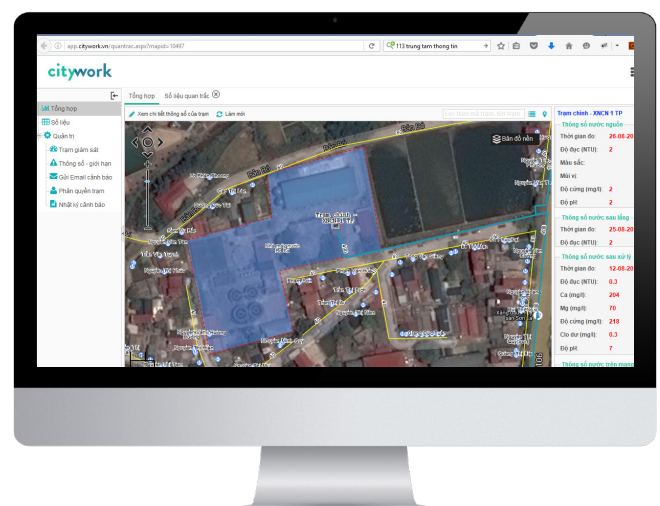


### Collect and update the monitoring results by mobile device

Support the capacity on recording the monitoring data, take photocopy of sampling points, results from the measurement instruments, etc., right at site through mobile device.

### Monitor and warn the water quality

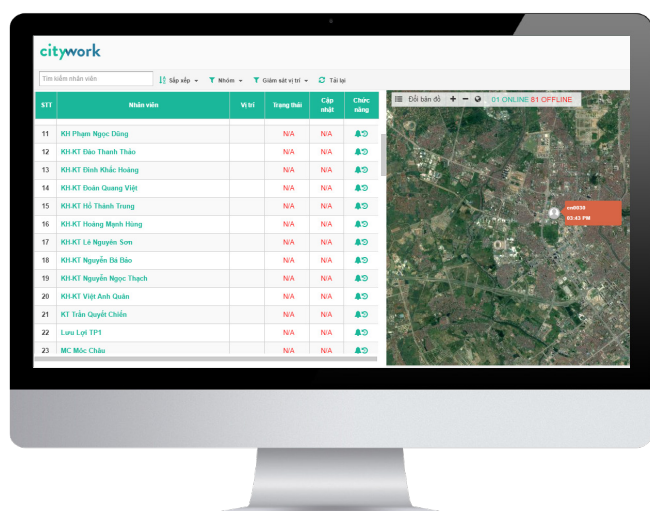
Automatically warn when a monitoring sample is characterized by over-threshold parameters as specified in the setting, warning email and SMS shall be automatically delivered to the officer in-charge.



## 7 SURVEILLANCE AND OPERATION SUBSYSTEM

### Dashboard on overall monitoring the production and business activities of the company

Provide the general information about the company's production and business activities on WEBSITE and mobile device. The company's leaders and managers may easily understand the existing conditions of the company through the visual and eligible presenting data in dashboard without reading a series of various reports.



### Monitor the job position and worker

When off-site working is required, the worker should use the mobile phone to checkin any positions and assigned tasks from on-going assets to report his working position.

The company's leaders or managers may monitor the positions and road maps of the field workers through Worker Surveillance Interface in the website or mobile device

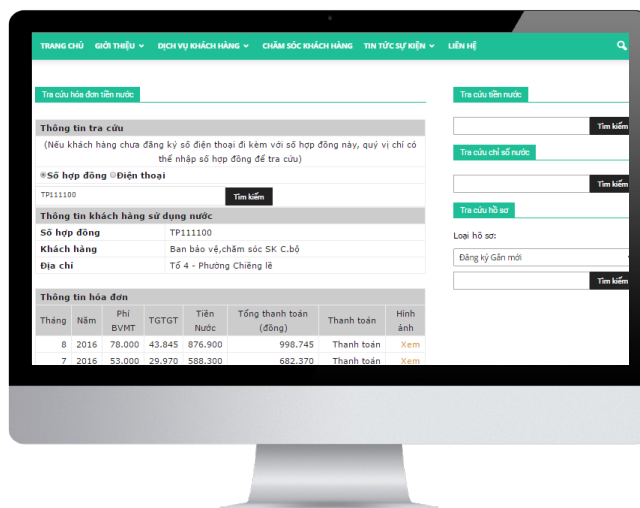
## 8 CUSTOMER CARE SUBSYSTEM

### Supply information to the customer

Introduce the company, its operations and offerings in the website.

Provide the capacity on online data lookup such as: water consumption readings, water bill details, etc., for the customer

The customer may register to fix new meters in the customer care portal.



### Timely **receive and handle** the customer requests

Receive the customer feedback through hotline. Assign and supervise the request processing procedure.

Control and summarize the customer care conditions.



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